

Procedure

1. Determine which unplugged wells in the Pavillion field have a production casing cement sheath gap. Universe of wells estimated to be 200.
 - a. Obtain fullest set of records possible¹, to include
 - i. Open hole logs
 - ii. Cement bond logs
 - iii. Wellbore schematic
 - iv. Well cementing and completion records
 - v. Well rework records
 - b. Review the above records and logs to determine whether there exists an aquifer and where there exists a gap in cement sheath above the cement top behind the production casing.
 - i. Review open hole density and resistivity logs to find possible aquifers in the geologic column
 - ii. Review CBLs and use 80% bond index as indicator of “good bond.” “Cement returns to surface” will not be wholly relied upon
2. Based on work performed in section 1, conduct a cement bond log on all gas wells in the Pavillion field for which there is no such log, or any of these wells that had remedial cement work done after the last cement bond log was run. Consider running a radial cement bond log, or if a standard CBL,
 - a. Run a CBL pass at 500 psi surface pressure from below uppermost perforations to surface.
 - b. Run a CBL pass at 0 psi surface pressure from below uppermost perforations to surface.
3. After work in Sections 1 and 2 are complete, determine which of all the unplugged wells in the Pavillion field have a gap in cement² where the top of cement is located deeper than the surface casing shoe depth. For all gas wells having a cement gap in the production casing, conduct mechanical integrity pressure tests on all gas wells in the Pavillion field:
 - a. Pull existing tubing string out of hole, unless already set on a packer, and the packer depth is above the uppermost open perforations and below the top of cement behind pipe, in which case proceed to step 3c.

¹ Located on WOGCC website, in WOGCC files, in BLM files, and in Encana files

² Using same quantitative standards in step 1b

- b. Using a workstring with a packer, in the production casing, set packer within 50 feet of the uppermost open perforation.
- c. Load annulus between production casing and workstring with fresh water.
- d. Pressure-test annulus at between 500 and 1,000 psi, to be determined based on level of concern of damage to casing wall.
 - i. Test duration is 30 minutes.
 - ii. Allowable pressure change during the test is 5% of applied pressure.
- e. If a well fails the test, evaluate the well to see if remedial cementing may be necessary.
- f. Monitor the bradenhead annulus space behind the production casing during the test. If communication between tubing/casing annulus and bradenhead is noted, then plan for remedial cementing.